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EDUCATION

Ph.D. in Natural Resource Sciences, University of Nebraska-Lincoln, December 2019
Master's in Community & Regional Planning, University of Nebraska-Lincoln, December 2005
M.S.J., Medill School of Journalism, Northwestern University, December 1985, print concentration
B.A., Bryn Mawr College, Bryn Mawr, Pennsylvania, 1984, History major, French minor

PROFESSIONAL EXPERIENCE

2021-present Research Assistant Professor, Drought Impacts Coordinator, National Drought Mitigation Center, School of Natural Resources, University of Nebraska-Lincoln
2016-present Assistant Director & Communications Coordinator, NDMC, UNL
2007-2012 School of Natural Resources, UNL, Communication Specialist and PR Manager
2006-2021 Communications Specialist, NDMC, UNL
2006 Lincoln Literacy Council, Consultant & Interim Program Coordinator
2004-2005 African Community Center, Program Facilitator
2002-2004 First Presbyterian Church, Director of Community Outreach
1995-2000 NDMC, UNL, Communications Specialist
1994-1995 Department of Agricultural Meteorology, Conference Organizer, November 1994-May 1995
1989-1994 Quad/Graphics, Inc., Corporate Communications Writer/Editor
1987-1989 Reporter, Waukesha County Freeman
1985-1987 Reporter, Belleville News-Democrat

RESEARCH AND RELATED APPLICATIONS

My research centers on drought impacts and how people in different sectors experience, describe and quantify the effects of drought. I created the [Drought Impacts Toolkit](https://droughtimpacts.unl.edu) (droughtimpacts.unl.edu) beginning in 2018, including developing new, continuously updated datasets from news stories, social media and crowdsourcing, and providing them all as maps. Map tools are updated in near real-time and contribute to the weekly U.S. Drought Monitor drought assessment process. Tools in the toolkit include:

- The Drought Impact Reporter (go.unl.edu/DIRdash)
- State Drought Impact Tables (droughtmonitor.unl.edu/DmData/StateImpacts.aspx)
- Condition Monitoring Observer Reports (go.unl.edu/CMOR_drought)
- Drought News and the Media Drought Index (go.unl.edu/DroughtNews)
- Drought Posts (go.unl.edu/DroughtTweets)

PUBLICATIONS

Gutzmer, D.; Ratcliffe, I.; **Smith, K.H.**; Svoboda, M.; Hayes, M. 2026: Twenty years of Drought Impact Reporter data (2005-2025). University of Nebraska-Lincoln. Dataset.

<https://doi.org/10.71964/123>

Smith, K.H. 2026. DIR_DM_byState, R code. <https://github.com/khelmsmith/TheBigZip>

Smith, K.H., D. Gutzmer, M.J. Hayes, M. Svoboda. Tracking drought impacts across two decades: Evolution, experience and data. Accepted for review in 2025 at *Bulletin of the American Meteorological Society*.

Hlavsová, M, M. Svoboda, M. Hayes, **K.H. Smith**, C. Poulsen, B. Zhang, J. Balek, J. Dvořák, M. Trnka. TerraDrought - a global drought monitoring, forecasting and impact reporting system. In review as of 2025 for *BAMS* Inbox.

Mwape, A., D. Bathke, M. Hayes, **K. Smith**, R. Mahmood, and E. Jones, 2025: Benefits of Stakeholder Participation in Drought Risk Management: Evidence from the Nebraska Republican River Basin Drought Exercise. *Case Studies in the Environment*, 9, 2698472, <https://doi.org/10.1525/cse.2025.2698472>.

Mwape, A., M. Hayes, D. J. Bathke, **K. H. Smith**, R. Mahmood, and E. Jones, 2025: Drought Management in Zambia: Insights from the 2023/2024 Drought. *Climate*, **13**, 227, <https://doi.org/10.3390/cli13110227>.

Armstrong, C. L., S. E. Baldinelli, **K. H. Smith**, and S. Medcalf, 2025: Expertise or Experience: Comparing Discussion of Drought between Audiences and Agencies in Nebraska, Kansas, Iowa, and Missouri. *Weather, Climate, and Society*, **17**, 449–459, <https://doi.org/10.1175/WCAS-D-24-0061.1>.

Armstrong, C., S. E. Baldinelli, **K. H. Smith**, and S. J. Medcalf, 2025: Debated, Deluged or Disappeared: The Flow of Public Discussion Surrounding Drought in FEMA Region 7. *Journal of Applied Communications*, **109**, <https://doi.org/10.4148/1051-0834.2565>.

Harp, R.D, Holcomb, K.M., Retkute, R., Prusokiene, A., Prusokas, A., Ertem, Z., Ajelli, M., Kummer, A.G., Litvinova, M., Merler, S., Piontti, A.P., Poletti, P., Vespignani, A., Wilke, A.B.B., Zardini, A., **Smith, K.H.**, Armstrong, P., DeFelice, N., Keyel, A., Shepard, J., Smith, R., Tyre, A., Humphreys, J., Cohnstaedt, L., Hosseini, S., Scoglio, C., Gorris, M., Barnard, M., Moser, S.K., Spencer, J., McCarter, M.S.J., Lee, C., Nolan, M.S., Barker, C.M., Staples, J.E., Nett, R.J., Johansson, M.A. 2025. Evaluation of the 2022 West Nile Virus Forecasting Challenge, USA. *Parasites and Vectors* 18, 152.

Guastello, P., **K.H. Smith**, C. Knutson, M. Svoboda, 2025. Drought Hotspots Around the World 2023-2025. United Nations Convention to Combat Desertification, Bonn. <https://www.unccd.int/resources/publications/drought-hotspots-around-world-2023-2025>

Smith, K. H., D.W. Walker, B. Zhang, W. Veness, M.R. Lam, C. Knutson, R. Stefanski, V. Aich, M. Svoboda, 2025: *Baseline Assessment of Drought Impact Monitoring*. World Meteorological Organization, Report No. 1355, <https://library.wmo.int/idurl/4/69496>.

Smith, K.H., 2024. Navajo rancher Mel Cody bridges cultures to enhance land and animal stewardship. *Western Horseman*, July.

J. Fard, B., Puvvula, J., **Smith, K.**, Hayes, M., Lookadoo, R., Mahmood, R., Medcalf, S., Rowe, C., Durr, M. and Bell, J.E., 2024. Health vulnerability mapping for drought: a case study in a predominantly rural, agricultural state. *Environmental Research: Health*. 10.1088/2752-5309/ad689a

Smith, K.H., Knutson, C., 2024. "Great Plains Flash Drought | Central North America | June-September 2012." In European Commission Joint Research Centre and United National Convention to Combat Desertification, World Drought Atlas, A. Toreti, D. Tsegai, L. Rossi, Eds. Publications Office of the European Union, Luxembourg. 10.2760/3842670, JRC 139691. pp. 106-7.

Walker, D.W., Vergopolan, N., Cavalcante, L., **Smith, K.H.**, Mawuton David Agoungbome, S., Almagro, A., Apurv, T., Dahal, N.M., Hoffmann, D., Singh, V. and Xiang, Z., 2023. Flash drought typologies and societal impacts: a worldwide review of occurrence, nomenclature, and experiences of local populations. *Weather, Climate, and Society*. <https://doi.org/10.1175/WCAS-D-23-0015.1>

Zhang, B., Abu Salem, F.K., Hayes, M.J., **Smith, K.H.**, Tadesse, T., Wardlow, B.D., 2023. Explainable machine learning for the prediction and assessment of complex drought impacts. *Science of The Total Environment*, Volume 898, 2023, 165509, ISSN 0048-9697, <https://doi.org/10.1016/j.scitotenv.2023.165509>.

Smith, K.H., Knutson, C., Svoboda, M., 2023. The Cascading and Compounding Impacts of Drought, 2023. Policy brief for the United Nations Convention to Combat Desertification, presented at COP28 in Dubai. bit.ly/3TjT1EA

Jedd, T., & **Smith, K. H.**, 2022. Drought-Stricken U.S. States Have More Comprehensive Water-Related Hazard Planning. *Water Resources Management*. <https://doi.org/10.1007/s11269-022-03390-z>

Zhang, B., Schilder, F., **Smith, K.**, Hayes, M., Harms, S., & Tadesse, T., 2021. TweetDrought: A Deep-Learning Drought Impacts Recognizer based on Twitter Data. 2021. ICML 2021 Workshop: Tackling Climate Change with Machine Learning. Conference paper. <https://www.climatechange.ai/papers/icml2021/32/paper.pdf>

Keyel A.C., Gorris M.E., Rochlin I., Uelmen J.A., Chaves L.F., Hamer G.L., et al., 2021. A proposed framework for the development and qualitative evaluation of West Nile virus models and their application to local public health decision-making. *PLoS Neglected Tropical Diseases* 15(9): e0009653. <https://doi.org/10.1371/journal.pntd.0009653>

Liu, T., Krop, R., Haigh, T., **Smith, K. H.**, & Svoboda, M., 2021. Valuation of Drought Information: Understanding the value of the US Drought Monitor in land management. *Water*, 13(2), 112.

Smith, K.H., M.E. Burbach; M.J. Hayes; P.E. Guinan; A.J. Tyre; B. Fuchs; T. Haigh; M.D. Svoboda, 2021. Whose ground truth is it? Harvesting lessons from Missouri's 2018 bumper crop of drought observations. *Weather, Climate and Society*. doi: 10.1175/WCAS-D-19-0140.1

Johnson, L. E., Geli, H. M., Hayes, M. J., & **Smith, K.H.**, 2020. Building an improved drought climatology using updated drought tools: A New Mexico Food-Energy-Water (FEW) systems focus. *Frontiers in Climate*, 2, 15.

Smith, K.H., A.J. Tyre, J. Hamik, M.J. Hayes, Y. Zhou, L. Dai, 2020. Using climate to explain and predict West Nile Virus risk in Nebraska. *GeoHealth* 9(4). doi: 10.1029/2020GH000244

Smith, K.H., A.J. Tyre, Z. Tang, M.J. Hayes, F.A. Akyuz, 2020. Calibrating human attention as indicator: Monitoring #drought in the Twittersphere. *Bulletin of the American Meteorological Society*. doi: 10.1175/BAMS-D-19-0342.1

Noel, M., D. Bathke, B. Fuchs, D. Gutzmer, T. Haigh, M. Hayes, M. Podebradska, C. Shield, **K.H. Smith**, M. Svoboda, 2020: Linking Drought Impacts to Drought Severity at the State Level. *Bull. Amer. Meteor. Soc.*, 101, E1312–E1321. doi:10.1175/BAMS-D-19-0067.1.

Liu, T., **K.H. Smith**, R. Krop, R., T. Haigh, M. Svoboda, 2020. Critical Analysis of the Value of Drought Information and Impacts on Land Management and Public Health. *Water* 2020, 12, 1064. doi: 10.3390/w12041064

Lackstrom, K., A. Farris, D. Eckhardt, N. Doesken, H. Reges, J. Turner, **K. Smith**, and R. Ward, 2017. CoCoRaHS Observers Contribute to "Condition Monitoring" in the Carolinas: A New Initiative Addresses Needs for Drought Impacts Information. *Bulletin of the American Meteorological Society*. doi:10.1175/BAMS-D-16-0306.1, January 2018

Zipper, S. C., **K. Helm Smith**, B. Breyer, J. Qiu, A. Kung, and D. Herrmann. 2017. Socio-environmental drought response in a mixed urban-agricultural setting: synthesizing biophysical and governance responses in the Platte River Watershed, Nebraska, USA. *Ecology and Society* 22(4):39. <https://doi.org/10.5751/ES-09549-220439>

Bachmair, S., Stahl, K., Collins, K., Hannaford, J., Acreman, M., Svoboda, M., Knutson, C., **Smith, K. H.**, Wall, N., Fuchs, B., Crossman, N. D. and Overton, I. C. (2016), Drought indicators revisited: the need for a wider consideration of environment and society. *WIREs Water*. doi:10.1002/wat2.1154

Smith, K.H., C.J. Stiles, M.J. Hayes, and C.J. Carparelli, 2015: Support for Drought Response and Community Preparedness: Filling the Gaps between Plans and Action. In *Western Water*

Policy and Planning in a Variable and Changing Climate, K. Miller, A. Hamlet, D. Kenney, and K. Redmond, eds., CRC Press – Taylor and Francis.

Smith, K.H. April 2015. Review of *Water Diplomacy: A Negotiated Approach to Managing Complex Water Networks*, by Shafiqul Islam and Lawrence E. Susskind (2012). *Journal of the American Planning Association*, Winter 2015, Vol 81, No. 1, 81-82.
doi:10.1080/01944363.2015.1030941

Smith, K.H., M. Svoboda, M. Hayes, H. Reges, N. Doesken, K. Lackstrom, K. Dow and A. Brennan, 2014. “Local observers fill in the details on drought impact reporter maps.” *Bulletin of the American Meteorological Society*, Vol. 95, 11, 1659-1662.

Lackstrom, K., A. Brennan, D. Ferguson, M. Crimmins, L. Darby, K. Dow, K. Ingram, A. Meadow, H. Reges, M. Shafer, and **K. Smith**. 2013. *The Missing Piece: Drought Impacts Monitoring*. Workshop report produced by the Carolinas Integrated Sciences & Assessments program and the Climate Assessment for the Southwest.

Smith, K.H. “New Guide Makes Community Drought Planning Easier.” *Bulletin of the American Meteorological Society*, February 2011, pp. 120-121.

Svoboda, M., **K.H. Smith**, M. Widhalm, D. Woudenberg, C. Knutson, M. Sittler, J. Angel, M. Spinar, M. Shafer, R. McPherson, H. Lazrus (2011) *Drought-Ready Communities: A Guide to Community Drought Preparedness*, National Drought Mitigation Center.

Bathke, D.J, J. Nothwehr, **K. Smith**, M. Widhalm, E. Hunt, and M.J. Hayes. 2009. Status of Drought Early Warning in the United States: National Integrated Drought Information System Workshop Summary. Submitted to the National Integrated Drought Information System program office.

Wardlow, B.D., M.J. Hayes, M.D. Svoboda, T. Tadesse, and **K.H. Smith**. “Sharpening the Focus on Drought – New Monitoring and Assessment Tools at the National Drought Mitigation Center,” *Earthzine*, March 30, 2009.

Ding, Y., and **K.H. Smith**. “2007 drought economic impacts,” *Crop Insurance Today*, Vol. 41, No. 1, February 2008, pp. 7-9, National Crop Insurance Services, Overland Park, KS.

GRANTS AND CONTRACTS AWARDED

“USDA Support of the U.S. Drought Monitor 2025-2026”, M. Svoboda, B. Fuchs, R. Rimsaite, **K. Smith**, T. Tadesse, C. Knutson, T. Haigh, N. Brozovic. USDA-OCE. \$1,280,000. 10/1/2025-9/30/2026. Lead on drought impacts and Condition Monitoring Observer Reports (CMOR) projects.

“USDA Support of the U.S. Drought monitor and Hub Activities for 2024-2025.” USDA’s Office of the Chief Economist. \$1.275 million. M. Svoboda, B. Fuchs, T. Haigh, C. Knutson, T.

Mieno, R. Rimsaite, **K. Smith**, T. Tadesse. 9/30/2024-9/30/2025. Lead on Cause of Loss sub-project.

“Building a Global Composite Drought Indicator (GCDI) Hot Spot Early Warning and Information System Follow-On Effort (Phase II),” contract with Department of Defense. M. Svoboda, D. Bathke, B. Fuchs, T. Haigh, C. Knutson, T. Roy, **K. Smith** (co-investigator), T. Tadesse, B. Wardlow. \$1.6 million. 1/15/2023-1/14/2025.

“EcoDrought in the Southwest.” **K. Smith**, subaward through New Mexico State University, project led by Hatim Geli. NOAA. \$60,464. 10/01/2022-09/30/2025. Sub-award lead.

“USDA Support of the U.S. Drought Monitor and Hub Activities for 2023-2024,” contract with USDA’s Office of the Chief Economist. \$1.275 million. 9/30/2023-9/29/2024. M. Svoboda, D. Bathke, B. Fuchs, T. Haigh, C. Knutson, T. Mieno, R. Rimsaite, **K. Smith**, T. Tadesse. Lead on Cause of Loss and CMOR sub-projects.

“Debated, deluged or disappeared: The flow of public conversation among stakeholders surrounding drought conditions within the Great Plains Region,” S. Meaker-Medcalf, University of Nebraska Medical Center, C. Armstrong, UNL College of Journalism and Mass Communications, **K.H. Smith** (unfunded co-investigator, domain expert). Seed grant from UNMC to CoJMC.

NDMC-UNL UNCCD Partnership Agreement. M. Svoboda, **K. Smith**, D. Bathke, B. Fuchs, C. Knutson, T. Tadesse. \$218,531. 7/17/2013-12/31/2024.

NDMC Technical Assistance on Drought Preparedness TOR3. M. Svoboda, D. Bathke, C. Knutson, **K. Smith**. \$49,916. World Bank. 9/1/2023-3/24/2024

Drought Vulnerability Assessment for Oregon, **K. Smith**, C. Knutson, M. Svoboda, D. Bathke. State of Oregon. \$192,261. 1/1/2023-1/31/2024. Led agriculture and recreation analyses.

Drought Impacts Baseline Report, K. Smith, M. Svoboda. \$20,000. International Drought Management Programme, Global Water Partnership Organization. 4/11/2022-12/31/2023. Lead author.

“Building a Global Composite Drought Indicator (GCDI) Hot Spot Early Warning and Information System,” contract with Department of Defense. M. Svoboda, D. Bathke, B. Fuchs, T. Haigh, C. Knutson, T. Roy, **K. Smith**, T. Tadesse, B. Wardlow. \$1 million. 9/15/2021-9/14/2022.

“Drought Triggers in the Caribbean,” C. Knutson, D. Bathke, B. Fuchs, M. Hayes, **K. Smith**, M. Svoboda. \$64,999. 5/3/2021-2/28/2022. Sub-project lead.

“USDA Support for Enhancements to the U.S. Drought Monitor 2021-2022,” B. Fuchs, D. Bathke, T. Haigh, C. Knutson, T. Mieno, R. Rimsaite, **K. Smith**, M. Svoboda, T. Tadesse, B. Wardlow. \$1,275,000. 10/01/2021-9/30/2022. Sub-projects lead.

“Drought Planning for the Republican River Basin”, **K. Smith**, D. Bathke. Nebraska Department of Natural Resources. \$89,810. 8/17/2020-5/6/2022. Project lead.

“USDA Support for the U.S. Drought Monitor and Climate Hub Activities for 2020-2023”, M. Svoboda, B. Fuchs, D. Bathke, T. Tadesse, C. Knutson, **K. Smith** and T. Haigh. USDA-OCE. \$2,374,999. 9/30/2020-9/30/2023. Sub-project co-lead.

“Providing Drought Information Services for the Nation: The National Drought Mitigation Center.” M. Svoboda, **K. Smith**, C. Knutson, T. Tadesse, D. Bathke, and B. Fuchs. NOAA-CPO-SARP. \$1,600,000. 9/1/2019-8/31/2021. Co-investigator.

“Drought Information Services and Research for Agriculture across the United States, 2020-21”, B. Fuchs, M. Svoboda, C. Knutson, **K. Smith**, T. Haigh and B. Wardlow. USDA-OCE. \$800,000. 10/1/2020-9/30/2021. Sub-project lead.

"Drought Summit and Outreach", Knutson, C., Svoboda, M., **Smith, K.**, and Haigh, T. American Planning Association, FEMA, \$85,000.00. 10/1/2017- 9/30/2019. Co-Investigator.

“Development of the Middle East and North Africa Network of Water Centers.” M. Hayes, M. Svoboda, B. Fuchs, T. Tadesse and **K. Smith**. Development Alternatives, Inc. \$40,052. 2/1/2015-12/31/2015.

“Development of a "Drought Ready Communities Program.” M.D. Svoboda, M. Sittler, **K. H. Smith**, M. Shafer, M. Palecki, C. L. Knutson, D. Arndt, D. Woudenberg and J. Angel. NOAA. \$288,670. Grant No. NA08OAR4310696. 7/1/2008 - 6/30/2010. Co-Investigator.

“Building a Drought Impact Reporting System for Hawaii.” M.D. Svoboda, M. J. Hayes, **K. Smith**, and Y. Ding. Commission on Water Resource Management, State of Hawaii. \$100,000. 6/23/2008 - 6/30/2011. Implementation lead.